

1957-22  
DIVISION  
ACTIVITIES

VOLUME 83 NO. HY6  
DECEMBER 1957  
PART 2

# **JOURNAL of the**

# ***Hydraulics***

# ***Division***

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**PROCEEDINGS OF THE**



**AMERICAN SOCIETY  
OF CIVIL ENGINEERS**

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## DIVISION ACTIVITIES

### HYDRAULICS DIVISION

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#### Proceedings of the American Society of Civil Engineers

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#### NEWS

December, 1957

#### PURPOSE OF THE HYDRAULICS DIVISION

The advancement and dissemination of knowledge relating to the occurrence of water in nature and its behavior in structures, water courses, and underground.

In particular the field of the Hydraulics Division shall embrace meteorology and hydrology as they affect the engineer, fluid mechanics in engineering usage, and applied hydraulics as a branch of engineering science which furnishes the basis for hydraulic design and for the practical use of water in the different specialized branches of hydraulic engineering.

#### ORGANIZATION OF HYDRAULICS DIVISION

The Official Register of the Society shows the basic organization of the Hydraulics Division. The affairs of the Division are handled by an Executive Committee consisting of four members appointed by the Board of Direction and a Secretary elected by the Board-appointed members of the Executive Committee. The Hydraulics Division has the following administrative committees:

- Committee on Publications
- Committee on Session Programs
- Committee on the J. C. Stevens Award
- Committee on the Karl Emil Hilgard Hydraulic Prize

The technical activities of the Hydraulics Division are in the hands of six technical committees, each consisting of five members appointed by the Executive Committee, these members being on staggered five-year-term bases. All except one of the technical committees supervise the work of two or more task forces, whose members are appointed by the Executive Committee upon the recommendation of the technical committee concerned. Members of the task forces serve indefinite terms until completion of the activity for which the task force was established or unless there is some other reason for a change in task force membership. The technical committees themselves are largely administrative with the actual technical accomplishments being delegated to the individual task forces.

Note: No. 1957-22 is part of the copyrighted Journal of the Hydraulics Division of the American Society of Civil Engineers, Vol. 83, HY 6, December, 1957.

**EXECUTIVE COMMITTEE****Name and terms:**

Harold M. Martin, Chairman	1959
Carl E. Kindsvater, Vice Chairman	1959
Wallace M. Lansford, Past Chairman	1958
Arthur T. Ippen	1960
Joseph B. Tiffany, Secretary	

**Meetings:**

The Executive Committee held meetings at Chicago, Illinois on 29-30 October 1956 and 28-29 October 1957. Also attending on the first days were the chairmen of the six technical committees. These October meetings open each new ASCE year with reviews and outlines of the work of the Division, Technical Committees, and Task Forces. The Committee also held a meeting at Cambridge, Massachusetts on 25, 27-28 August 1957.

**ADMINISTRATIVE COMMITTEES****Committee on Publications:**

**Purpose:** To review critically and edit papers submitted for publication in the Society publications; this to be done in accordance with the policies of the Society's Committee on Publications, and to encourage and stimulate the preparation of papers for publication and presentation at sessions of the Division.

**Personnel:** James W. Ball, Chairman  
Harold M. Martin (Chairman, Executive Committee)  
Joseph B. Tiffany (Secretary, Executive Committee)

**Accomplishments during the year:** See section entitled "Publications."

**New Activities Planned:** No new activities are planned for this committee.

**Committee on Session Programs:**

**Purpose:** To plan and execute programs for all meetings of the Division.

**Personnel:** Chairmen of the technical committees with the chairman and vice chairman of the Division serving in the same respective positions on the committee.

**Accomplishments during the year:** See section entitled "Convention Sessions."

**Committee on the J. C. Stevens' Award:**

**Personnel:** To be selected.

**Committee on the Karl Emil Hilgard Hydraulic Prize:**

**Personnel:** Eugene P. Fortson, Jr., Chairman  
Others to be selected.

**Newsletter Editor:** Ellis B. Pickett.

## TECHNICAL COMMITTEES

## Committee on Design:

**Purpose:** To stimulate the accumulation and dissemination of hydraulic design methods, and of comparisons of predicted and measured flow characteristics, and to foster the reduction of research results to reliable design methods.

<b>Personnel:</b> Jacob H. Douma, Chairman	1959
Glenn E. Hands	1960
Alvin J. Peterka	1961
Harold K. Pratt	1962
Rex A. Elder	
Leslie J. Hooper, Past Chairman	1957

**Accomplishments during the year:** The work of this committee is largely delegated to task forces as follows:

1. **Energy Dissipators for Spillways and Outlet Works:** This task force has completed its program in that four papers have been presented covering the hydraulic design and operating experience of various types of energy dissipators. Two of the papers have been published.
2. **Friction Factors in Large Conduits:** The task force continued the search for additional available prototype test information to supplement the USBR Engineering Monograph No. 7, "Friction Factors for Large Conduits Flowing Full."
3. **Hydraulic Aspects of the Design and Operation of Spillways and Crest Gates:** This task force had an organizational meeting at Denver on May 3rd and 4th. The scope of the work was discussed and it was decided to limit the work of this particular task force to the hydraulic designing and operation of spillways. Methods of classifying spillways either by height, by use, by types of gate or type of dams and other ways were discussed at length. The committee has made tentative assignments of the work that they propose to cover and it is hoped that a good start has been made in finally tackling this problem.
4. **Nomenclature for Hydraulics:** The glossary card file has been completed with 5476 items at the moment. These cards have been microfilmed as a safety precaution and the original cards are being circulated among the members of the committee at this time for their review. At the moment of the report only one member had to complete his survey of the items. This committee proposes to have a draft edition of the Nomenclature prepared in a limited number of copies that could be circulated to various groups in the Hydraulics Division and possibly others in the ASCE interested in hydraulics.
5. **Gates and Valves for Reservoir Conduits:** Two papers were presented at the Hydraulics Division Conference at Cambridge by this sub-committee. They were: "Hydraulic Butterfly Valves"

by Ross L. Mahon and "Fixed Cone Dispersion Valves—Influence of Operating Requirements and Site Conditions on Design of Discharge Structures" by M. L. Dickinson, S. M. Barnes and R. S. Milmoie, Jr. A third paper entitled, "Some Considerations on Use of Slide Gates as Controls for Flow of Water," by Paul F. Keim could not be presented at the last minute due to the author's absence from the country. It is proposed that another session comprising three papers devoted to vertical lift gates and a second session of three papers devoted to tainter gates will be planned for the Portland Convention in June 1958. It is finally proposed that the chairman of this task force will present a summary report that will give in concise form the information more voluminously presented in the individual papers. It is felt that this summary reports will be in effect the completion report for the task force.

6. **Water Measurements:** This task force has continued to progress steadily in the preparation of their first draft of a manual on water measurement. At the present time they feel that the work is 85% complete.

The Committee on Design arranged for a half-day session at the Jackson Convention; for a half-day session at the Buffalo Convention; and for one half-day session at the 1957 Hydraulics Division Meeting at Cambridge. The Committee on Design, together with the Committee on Research, jointly sponsored two sessions for the New York Convention in October 1957. Preparations are being made for one or more sessions at the Portland Convention in June 1958; for one session at the Atlanta Hydraulics Division Convention in 1958; and one session for the New York Convention in October 1958.

#### Committee on Floods:

**Purpose:** To promote the collection and compilation of data pertaining to floods in the United States, giving particular attention to the following: The interpretation of flood data; methods of flood control; hydraulic factors underlying the design of flood control works; problems arising from the operation of flood control works. Consideration is to be given to prevention of flood damage by methods other than flood control.

<b>Personnel:</b>	H. Alden Foster, Chairman	1958
	Joseph I. Perrey	1959
	Joseph F. Friedkin	1960
	Arno T. Lenz	1961
	Francis G. Christian	1962
	Ralph D. Goodrich, Past Chairman	1957

**Accomplishments during the year:** The work of this committee has been organized in task forces as follows:

- Economic Effects of Floods on Agriculture
- Effect of Floods on Industry
- Effect of Floods on Transportation
- Maintenance and Operation of Flood Control Works
- Use and Control of Flood Plains

The committee has concluded that the work of the above task forces has been largely completed and is considering the desirability of establishing new task forces to engage in phases of flood studies not presently being studied. Dr. Lenz is preparing a bibliography of articles relating to floods which have been published in the Transactions and Proceedings to serve as a basis for devoting appropriate study for development by task forces.

The Committee on Floods has produced material for technical sessions at the Jackson and New York 1957 Conventions, and collaborated with the Committee on Hydrology in preparing a technical session held at the Hydraulics Division Convention at Cambridge. Plans are nearly complete for a session of two or three papers at the Chicago Convention in February 1958 and for a program of three papers for the Portland Convention in June 1958. Arrangements have been completed for four papers for the 1958 Hydraulics Division Conference in Atlanta.

#### Committee on Hydrology:

- Purpose:
- a) To stimulate in civil engineering practice the adoption of precepts, theories, and design methods progressively developed in the field of applied hydrology;
  - b) to sponsor activities designed to increase knowledge of that phase of the hydrologic cycle beginning with the causes of rainfall and ending with the accumulation of runoff into channel flow and percolation to the groundwater table;
  - c) to maintain cooperation with the Section of Hydrology of the American Geophysical Union, and other groups representing hydrology and related fields of science; and
  - d) to encourage cooperation between federal, state and private interests in establishing and maintaining facilities for obtaining hydro-meteorological data.

Personnel:	William E. Hiatt, Chairman	1958
	Charles C. McDonald	1959
	David K. Todd	1960
	Gordon R. Williams	1961
	Victor A. Koelzer	1962
	Herbert S. Riesbol, Past Chairman	1957

Accomplishments during the year: The Committee on Hydrology produced material for a program on three papers at the 1957 New York Convention. Additionally, the Committee collaborated with the Committee on Floods in preparing a program of four papers presented at the Hydraulics Division Conference in Cambridge. Plans have been made for a program of four papers at the Chicago Convention in February 1958. It is contemplated that papers will be arranged for one session at the Hydraulics Division 1958 Convention in Atlanta.

Activities in the two task forces under this committee were as follow:

1. Hydrologic Data: This task force has completed the preparation of a preliminary draft of its report. It met in Washington early in October 1957 to review that draft and make recommendations for its revision, so that the report can be submitted to the



Committee on Hydrology in final form by the end of the calendar year 1957.

2. **Spillway Design Floods.** This task force is cooperating with the Joint AWWA-ASCE Spillway Committee.

The committee has discussed the desirability of setting up a new task force on "Water Law in Humid Regions of the United States." No action has been taken on this suggestion.

The committee has corresponded with a representative of the American Society of Mechanical Engineers, and with Mr. C. A. Willson, Chairman of the ASCE Committee on Standards, regarding the standardization of flow measurements in open channels.

#### Committee on Research:

**Purpose:** To initiate, organize, sponsor, and coordinate research in the hydraulic field, and to further the advancement of hydraulics through coordination of endeavor with related fields of fluid mechanics.

<b>Personnel:</b> Donald R. F. Harleman, Chairman	1959
Frank B. Campbell, Past Chairman	1958
John F. Ripkin	1960
Emmett M. Laursen	1961
James M. Robertson	1957

**Accomplishments during the year:** The committee arranged two half-day sessions at the Jackson Convention; four half-day sessions at the Buffalo Convention, jointly sponsored by the Committee on Design of the Hydraulics Division and the Committee on Research of the Waterways and Harbors Division; arranged two half-day sessions for the New York Convention in October 1957; and arranged one half-day session for the Hydraulics Division Convention at Cambridge. Plans are in progress for one or more sessions for the Chicago, Portland, and New York 1958 Conventions and for the 1958 Hydraulics Division Convention at Atlanta.

Three task forces operate under the committee, as follow:

1. **Task Force on Aerated Flow in Open Channels:** This task force first will review research work on this subject to date and prepare a report on the present state of knowledge. The task force held one meeting and sponsored a symposium at the Jackson Convention in February 1957.
2. **Task Force on Cavitation in Hydraulic Structures:** This task force was organized during this year, has met, and preliminary work is in progress. A symposium was sponsored at the Pittsburgh Convention in October 1956.
3. **Task Force on Friction Factors in Open Channels:** This task force has just been organized. A meeting will be held soon to get work of the task force started.



## Committee on Sedimentation:

**Purpose:** To study and report on problems connected with the erosion, transportation and deposition of sediment in rivers, canals, reservoirs and harbors; including methods of sediment control.

<b>Personnel:</b> Alvin G. Anderson, Chairman	1959
Fred H. Larson, Past Chairman	1958
Albert P. Gildea	1960
Enos J. Carlson	1961
Robert B. Banks	1962
Walter L. Moore	1957

Accomplishments during the year: The Committee on Sedimentation arranged programs for half-day sessions at the Jackson Convention and at the Hydraulics Division Convention in Cambridge. Four papers were presented at the New York Convention in October 1957; two papers from the Task Force on Rates of Reservoir Sedimentation and two papers from the Task Force on Sediment Distribution in Reservoirs. A program is being planned for the Portland Convention in June 1958 and for the Hydraulics Division 1958 Convention in Atlanta.

The work of this committee is conducted by the following task forces:

1. **Task Force on Preparation of Manual on Sedimentation:** This task force met for several days during the Jackson Convention in February 1957 and excellent progress was made in preparing the manual.
2. **Task Force on Rates of Reservoir Sedimentation:** The work of this task force is nearing completion, and the group will probably be dismissed about 1 July 1958. As noted above this task force participated in a technical session at the New York Convention in October 1957.
3. **Task Force on Sediment Distribution in Reservoirs:** Work is continuing.
4. **Task Force on Local Scour:** This task force has been established within the past few months. They planned to meet early in December to lay out their program of work.

## Committee on Tidal Hydraulics:

**Purpose:** To study and report on the hydraulics of tidal waters, including shore currents, drifts, tides and hydraulic phenomena in estuaries.

<b>Personnel:</b> Eugene P. Fortson, Jr., Chairman	1959
Clarence F. Wicker	1958
Lindsay P. Disney	1960
Haywood G. Dewey, Jr.	1961
Irvin M. Ingerson	1962
Joseph M. Caldwell, Past Chairman	1957

Accomplishments during the year: Arrangements were made for one session at the February 1957 Jackson Convention and for one session at the

October 1957 New York Convention, which was jointly sponsored with the Ports and Harbors Committee of the Waterways and Harbors Division. The committee also arranged a session at the 1957 Cambridge Hydraulics Division Convention. Plans are being made for papers for the June 1958 Portland Convention, for the October 1958 New York Convention and for the 1958 Atlanta Hydraulics Division Convention.

### PUBLICATIONS

#### Journal of the Hydraulics Division:

Five volumes of the Journal have been published in 1957 thus far. The following statistics concerning papers for the Journal have been supplied by Mr. H. G. Dewey, Past Chairman of the Committee on Publications:

Active papers on hand 18 September 1956	17
New papers received 18 September 1956- 23 August 1957	46
Papers sent to ASCE Headquarters by Chairman of Hydraulics Division Executive Committee	4
Total	<u>67</u>

Status and accomplishments of the 67 papers follow:

Pending	14
Published	22
Forwarded to Headquarters for Publication	13
Declined	13
Withdrawn	3
Transferred to another Division	2
Total	<u>67</u>

#### Manuals:

ASCE Manual 35, "List of Translations of Foreign Literature on Hydraulics," prepared by the Committee on Research, was printed and distributed to ASCE members. The Executive Committee prepared a pamphlet "Hydraulics Division Handbook" for use in the Hydraulics Division.

#### New Reports or Manuals Underway:

As noted above, the Committee on Sedimentation has a task force which is preparing a manual on sedimentation. It is expected that this manual will be in first draft stage within another year.

### CONVENTION SESSIONS

The Hydraulics Division conducted technical sessions at the following Society meetings:

ASCE	Hydraulics Division		1957-22--9
<u>Place</u>	<u>Dates</u>	<u>No. of Sessions</u>	<u>Attendance</u>
Pittsburgh	October 1956	7 (2 jointly w/other Divisions)	40-100
Jackson	February 1957	5	35-150
Buffalo	June 1957	5 (4 jointly w/other Divisions)	40-65
Cambridge (Hydraulics Division Conference)	August 1957	5	125-200
New York	October 1957	5	50-100

The Pittsburgh Convention sessions were planned by the 1956 Chairman of the Executive Committee, Mr. J. B. Tiffany. The Jackson, Buffalo, and New York Conventions sessions and the Cambridge Hydraulics Division sessions were arranged by the 1957 technical sessions committee chairmaned by Professor W. M. Lansford.

Plans are being made for technical sessions at the following future Conventions:

<u>Place</u>	<u>Dates</u>	<u>No. of Sessions</u>
Chicago	February 1958	3
Portland	June 1958	6
Atlanta (Hydraulics Div. Conference)	August 1958	6
New York	October 1958	4

#### COOPERATION WITH OTHER SOCIETIES

This Division is cooperating with the American Standards Association through its Task Force on Hydraulics Nomenclature. This liaison is being accomplished through Mr. Clarence A. Willson, a member of the Standards Council and Chairman of the Society Standards Committee.

It is also cooperating with the ASCE-AWWA Committee on Spillways through the Task Force on Spillway Design Floods under the Committee on Hydrology.

The Committee on Hydrology is also cooperating with the American Society of Mechanical Engineers through its Committee on Fluid Meters Research.

#### COOPERATION WITH LOCAL SECTIONS

The policy of the Hydraulics Division is to extend every possible assistance to local sections, when requested.

#### STANDARDS

This Division is cooperating with the American Standards Association through the regularly established machinery. No specific program on

establishment of standards is underway except through task force work on Hydraulics Nomenclature.

### CONFERENCE ON TECHNICAL PROCEDURE

The Conference on Technical Procedure held at Oklahoma City in April 1957 was attended by the following Hydraulics Division officers: Professor W. M. Lansford, Chairman, who led a discussion on Planning and Conducting Division Conferences; and Mr. Harold M. Martin, Vice Chairman, who led a discussion on Operation of a Division Research Committee. Mr. Joseph B. Tiffany, Secretary, prepared a paper entitled Production and Distribution of Division News, which was presented for him by Professor Lansford and Mr. Martin.

### NATIONAL CONFERENCE OF HYDRAULICS DIVISION

Place: Cambridge, Massachusetts

Date: 26-28 August 1957

Number of Sessions: Five

Attendance: Approximately 200 men, 75 ladies, 50 children

Men arranging conference:

Program: Professor W. M. Lansford with the cooperation of the chairman of the technical committees arranged for papers at the technical sessions.

Local Arrangements: Dr. Arthur T. Ippen, General Chairman  
Committee Chairmen:

Professor J. W. Daily	Finance
Professor G. R. Williams	Entertainment
Professor D. R. F. Harleman	Registration & Technical Program
Professor P. S. Eagleson	Publicity
Professor R. E. Nece	Housing
Mrs. A. T. Ippen	Ladies' Program

Cooperating Organizations: Hydrodynamics Laboratory, Department of Civil and Sanitary Engineering, MIT; Boston Society of Civil Engineers, Hydraulics Section; Massachusetts Section, ASCE.

Plans for Future Conferences: The next Hydraulics Division Conference will be held in Atlanta, Georgia, 20-22 August 1958. The Georgia Section, ASCE, and the Georgia Institute of Technology will be co-hosts for the Atlanta meeting. A meeting of the Executive Committee is tentatively planned to be held at Atlanta during the course of the Convention.

### COOPERATION WITH DISTRICT COUNCILS

The Hydraulics Division did not participate in such councils this year, although it stands ready to do so when an opportunity is presented.

## ASCE--CHICAGO CONVENTION

February 1958

## HYDRAULICS DIVISION

Session sponsored by Committee on Floods, Hydraulics Division

Tuesday, February 25, 1958

9:30 a.m. to 12 noon

Presiding: Joseph B. Tiffany, Jr., Secretary Executive Committee, Hydraulics Division, and Joseph I. Perrey, Member, Committee on Floods, Hydraulics Division

## FLOODS IN THE CHICAGO AREA

Horace P. Ramey, Chief Engineer, Metropolitan Sanitary District of Greater Chicago

## RADAR FOR RAINFALL MEASUREMENT AND STORM TRACKING

Glenn E. Stout, Head, Meteorology Section, Illinois State Water Survey Division, Urbana, Illinois

## WATER CONSERVATION AS IT AFFECTS THE WISCONSIN RIVER VALLEY

Lewis L. Sheerar, Assistant to the General Manager, Wisconsin Valley Improvement Company, Wausau, Wisconsin

Session sponsored by Committee on Hydrology, Hydraulics Division

Tuesday, February 25, 1958

2:30 to 5:30 p.m.

Presiding: Joseph B. Tiffany, Jr., Secretary, Executive Committee, Hydraulics Division, and W. E. Hiatt, Chairman, Committee on Hydrology, Hydraulics Division

## EVAPORATION OF LAKE ONTARIO

Ira A. Hunt, Jr., Captain, Corps of Engineers, United States Lake Survey, Detroit, Michigan

## HYDROLOGY OF LAKE ONTARIO

R. H. Clark, Department of Northern Affairs and National Resources, Water Resources Branch, Ottawa, Ontario, Canada

## CURRENTS AND WATER MASSES OF LAKE MICHIGAN

John C. Ayers et al, University of Michigan, Great Lakes Research Institute, Ann Arbor, Michigan

## PHYSICAL LIMNOLOGY OF GRAND TRAVERSE BAY

G. H. Lauff, University of Michigan, Great Lakes Research Institute, Ann Arbor, Michigan

Session sponsored by Committee on Research, Hydraulics Division

Wednesday, February 26, 1958

2:30 to 5:30 p.m.

Presiding: Joseph B. Tiffany, Jr., Secretary, Executive Committee, Hydraulics Division, and D. R. F. Harleman, Chairman, Committee on Research, Hydraulics Division

## PRESSURE CHANGES AT OPEN JUNCTIONS IN CONDUITS

W. M. Sangster, H. W. Wood, and E. T. Smerdon, University of Missouri, Columbia, Missouri, and H. G. Bossy, Bureau of Public Roads, Washington, D. C.

**SCOUR BELOW A CANTILEVERED OUTLET**

M. L. Albertson and G. Smith, Colorado State University, Fort Collins, Colorado

**BACKWATER AT BRIDGE CONSTRUCTIONS**

H. K. Liu, Colorado State University, Fort Collins, Colorado, and  
J. N. Bradley, Bureau of Public Roads, Washington, D. C.

**OUTLET PORTAL PRESSURE DISTRIBUTION**

M. B. McPherson, Philadelphia Water Department, and Alain R.  
R. Morel, Former Gotshall Scholar, Lehigh University, Bethlehem,  
Pennsylvania

**MISCELLANY**

This Newsletter is being sent to members of the Society who have designated the Hydraulics Division as one of their fields of professional interest. Members of the Division are invited to submit to the secretary or editor any contributions of interest for the Newsletter and are also urged to consider contributing to the technical work of the Division by preparing papers or discussions. Any member of the Executive Committee or of the technical Committees will be glad to hear from possible contributors of technical papers for publication or for use at a meeting. Your editor will endeavor to publish the Newsletter items as they are received, subject to the Hydraulics Division Executive Committee policy.

Newsletters are published separately from, but mailed in the same envelope with the Journals. This is to reduce mailing and postage cost. The approximate mailing dates of the bi-monthly Hydraulics Division Journal and the corresponding deadline dates for contributions for each issue are as follows:

<u>Journal</u>	<u>Contributions</u>
February 15	December 15
April 15	February 15
June 15	April 15
August 15	June 15
October 15	August 15
December 15	October 15

Most of this issue's news items on the Hydraulics Division and its Technical Committees and their Task Forces were extracted from the 1956-57 Annual Report of the Division.

**FOR YOUR CALENDAR****ASCE Meetings**

February 24-28, 1958  
June 23-27, 1958  
August 20-22, 1958  
October 13-17, 1958  
February 19-23, 1959  
May 4-8, 1959  
October 19-23, 1959

ASCE, Chicago Convention  
ASCE, Portland, Oregon, Convention  
Hydraulics Division, Atlanta Conference  
ASCE, New York Convention  
ASCE, Los Angeles Convention  
ASCE, Cleveland Convention  
ASCE, Washington, D. C., Convention

ASCE

Hydraulics Division

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Non-ASCE Meetings

June 11-14, 1958

Third U. S. National Congress of Applied  
Mechanics, Brown University, Providence, R. I.

MERRY CHRISTMAS

HAPPY NEW YEAR

Newsletter Editor:

E. B. PICKETT

P. O. Box 631

Vicksburg, Mississippi



